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Fern Notes. VI.

By George E. Davenport.

Aspidium Filix-mas, Swz., *in California.*—In the Bulletin for February, 1882, I announced the discovery of this species on Mt. Wrightson, in Arizona, by Mr. Pringle, and expressed the conviction that its discovery so near to California would stimulate the botanists of that State in their efforts to find it, as its presence there was more than ever probable. I now have the pleasure of announcing its discovery in the Halcomb Valley, in the San Bernardino Mts., at an altitude of about 9,000 feet, on the 1st of August, 1882, by those keen-eyed botanists, the brothers Parish.

This discovery is especially interesting from the fact that all previously reported discoveries of the species in California have apparently come from the very strong resemblance which some forms of the *A. argutum* of Kaulfuss bear to it; but, whatever doubts may exist in regard to other specimens, there seems to be no question as to the identity of the plant sent by Mr. Parish. The characters are unmistakably those of *Filix-mas* as distinguished from those of *argutum.*

These characters have previously been pointed out (*l. c.*), but it may be well to state here, in addition, that I have not found more than 5 fibro-vascular bundles in the stipes in my own specimens of *Filix-mas*, so far as I have examined them, although the number may reach 7 in others, as stated in Ferns of North America.

In my specimens from Canada (Mrs. Roy), Colorado (Brandegee and others), Dakota (Walter Jenney), and Arizona (Mr. Pringle), the number is uniformly 5, and there are but 5 in my specimens from England. In *argutum* I have found from 3 to 5, according to the size of the fronds, and probably the correct number for *Filix-mas* will be from 5 to 7, according to the size of the fronds; but, since the same number (5) occurs in both species, and in specimens of a nearly corresponding size, it is evident that this character cannot be relied upon for positive determination.

The plant which I have received from Mr. Parish is small, heavily fruited—the fructification descending to the lowest pinnæ—and, on account of its deeply serrated margins, belongs rather to the form described as var. *incisum* than to the typical European form. I have also received from Mr. W. N. Suksdorf the upper portion of a large frond, apparently belonging to *A. Filix-mas*, which was collected by him in Washington Territory in July, 1882. The range of this species in the United States may now be given as extending from Canada (Owen Sound), or Newfoundland, according to Kunze (who stated positively that he had "seen true *Filix-mas* from Newfoundland"), to Washington Territory, in the north-west, by way of Northern Michigan and Dakota, and to Southern California, in the south-west, through Colorado and Arizona. Its presence, therefore, in intermediate stations is to be expected.

Botrychium Virginianum, Swz., var. *gracile*, Hook. & Grev. (*B. gracile*, Pursh.)—Mr. Suksdorf sends from Washington Territory a specimen of this little fern, which Pursh (Fl. Amer. Sept. Vol. ii.,

p. 656) originally described, and which some still regard as a distinct species.

In drawing up his characters, Pursh seems to have relied chiefly on the presence or absence of pubescence as the distinguishing features between his plant and *B. Virginianum.* But an examination of any considerable number of specimens will show that pubescence is sometimes present in *gracile* and wanting in *Virginianum*, so that this character was not well founded. The other characteristics are only such as might be expected in plants in different states of development.

The plant first appears as a variety of *B. Virginianum* in Hooker's Botanical Miscellany (Vol. iii., p. 223, 1833), where it was published as such by Hooker and Greville from specimens communicated by Dr. Torrey, who (*vide* same authorities, *l. c.*) regarded it merely as a variety. Later (1843), Dr. Torrey so published it in his Flora of New York, and, according to Milde (Botrychiorum Monographia), in 1847 Presl also published it as a variety in the Supplement to his Pteridographiæ. This disposition of the plant was afterwards confirmed by Dr. Milde (*l. c.*), and is now very generally accepted.

The probabilities are, however, that this form is rather the *young state* of *B. Virginianum* than a true variety. Clarence Lown writes me that with him it is not uncommon, but that it is impossible to tell where the so-called variety ends and *Virginianum* begins ; and such is the testimony of the specimens which have passed through my hands. It is more than probable that if we should trace the development of *B. Virginianum* from the prothallus upward, year after year, we would find the young plant at first smooth, and with an ever increasing pubescence with age. We could thus account for the infrequency of pubescence in young plants, some retaining their smoothness longer than others.

Mr. Suksdorf's specimen is typical of Pursh's plant. It is everywhere smooth, and the bud itself is wholly free from any trace of pubescence.

In the vernation of mature specimens of *B. Virginianum* the bud is invariably clothed with a hairy covering ; but, in these younger plants, the bud is but scantily clothed at the most, or is wholly smooth (as in Mr. Suksdorf's specimen)—a circumstance which does not appear to have been noticed by any one heretofore (not even by Milde, who more than once distinctly notices the hairiness of the bud in *B. Virginianum*), and which was overlooked by myself in my Notes on the Vernation in Botrychia in the TORREY BULLETIN for January,1878 (Vol. vi., p. 193). Probably a truer diagnosis of the vernation in this species than heretofore published will be : bud smooth at first (in the youngest state), finally pubescent, the hairy covering of the mature bud having only gradually been taken on with age.

This, possibly, may also be true of the vernation in *B. ternatum*, where the bud is even more densely clothed with hairiness ; but I have not as yet seen, even in my smallest specimens, a bud of that species wholly free from pubescence. Its vernation, therefore, may remain as previously described (*l. c.*).

Asplenium Bradleyi, D. C. Eaton, *in New York State.*—The only station heretofore recorded (Ferns of North America, Vol. i., p. 40) for this rare fern in New York State is that of the hill at Newburgh, where Prof. Eaton found it in 1864. This station, there is every reason to believe, has since been destroyed. Mr. Peck, in a letter from which I am permitted to quote, says that he searched over and around the hill for nearly a whole day without finding any of this fern. The upper part of the hill, he adds, "had recently been cleared, and I suspect the station there is destroyed." New York botanists will therefore be pleased to learn that a new station has been discovered in the Shawangunk Mts. by Clarence Lown, of Poughkeepsie, who visited the mountains on the 21st of September, 1882, for the purpose of obtaining some *A. montanum*, and unexpectedly came upon *A. Bradleyi* growing near by.

Mr. Lown, who has already partially explored these mountains with good results, writes that he now has "stronger hopes than ever of finding *Asplenium pinnatifidum* in this mountain range." The consummation of these hopes may reasonably be expected.

Mr. Lown reports *A. Bradleyi* as apparently very scarce, and this appears to be the case in all of its other known localities, a fact which should be taken into serious consideration by all botanists who may at any time be fortunate enough to find it, and for which reason its exact locality is not more definitely given here.

Abnormal Asplenium montanum.—Mr. Lown sends some very curiously forked fronds of this species, also collected in the Shawangunk Mts., where, he states, forked fronds are not uncommon. I have noticed the same disposition to fork in specimens from other localities, and this little fern really seems to take delight in such freaks.

In most of Mr. Lown's specimens, the *stipes* forks near the base into two distinct stalks, each bearing a perfect lamina. In one instance, one of these double laminæ again becomes forked just above the first pair of pinnæ, dividing into two and giving to the whole the appearance of being three-fronded. In the commonly accepted mode of designation, this three-branched frond might be considered as three fronds with their stalks united at the base, but morphologically it can only be regarded as one. In other instances the forking occurs near the top, the main rachis forking and thus forming a bifid apex. This last manner of forking is frequently met with in nearly all ferns, and is especially characteristic of *Dicksonia pilosiuscula*, in which species it is often carried to such an extent that every pinna on the frond becomes bifid at the apex.

Abnormal Osmunda regalis.—Mrs. C. N. S. Horner, of Georgetown, Mass., has given me some interesting specimens of this species in which the fertile and sterile portions are strangely mixed up, the fertile panicle proper being partly sterile (in one specimen being crowned with a sterile apex) and the upper part of the sterile portion proper being fruited in a variety of ways. Some of the upper pinnules are crenately incised, others are fertile on one side, and some, strongly auricled at the base, are sterile for ⅜ or ½ an inch, and are then abruptly contracted into a narrow, double row of capsules for an inch or so, when they as abruptly expand into a broad, sterile apex. Odd freaks in this species are not uncommon. Prof. Guttenberg and others have sent me specimens of a somewhat similar character before, and many of diverse character have come under my own observation.

Abnormal Botrychium Virginianum.—Forkings of the fertile branch in this species have previously been recorded by others, as well as myself, but the only instance known to me where the fertile panicle is partly transformed into a sterile one occurs in my only California specimen—one of three specimens collected in 1873 by F. A. Miller during an excursion to the Sierras from San Francisco for seeds and plants, and, I may add, the only specimen known to me as ever coming from California. In this specimen, the branches of the fertile panicle are alternately sterile and fertile all the way up. The frond itself is of good size and there is scarcely a trace of pubescence on it ; but, as the common stalk was broken off some distance from the base, it is impossible to describe its characters below.

New North American Fungi.

By Geo. Winter.

Sorosporium Ellisii.—Glomeruli forma magnitudineque varia, mox subsphæroidei, mox oblongi, opaci, e sporis numerosis compositi, 35–70 μ diam. Sporæ rotundato-polygoniæ, episporio granuloso, fuscæ dissolventes, 12–16μ longæ, 8–12μ crassæ vel 12μ diam.

Ad *Andropogonem Virginicam*, Newfield, New Jersey, et ad *Aristidam dichotomam*, Chester Co., Pa. Legit Wm. Trimble.

Ustilago Vilfæ.—Massa sporarum fusconigra, inflorescentiam totam implectens et destruens (fere more *Ustilaginis destruentis*). Sporæ subrotundæ vel parum elongatæ et oblongatæ, amœne fuscæ, episporio granuloso, 12–16μ diam. vel usque 19μ longæ.

Ad *Vilfam vaginæfloram*. Chester Co., Pa. Legit Dr. Martin.

Gonatobotrys maculicola.—Flocci solitarii, sparsi, in macula subrotunda angulataque fusca, fusco-nigro cincta, exarida, hypophylli, longi, erecti, flexuosi, fusci, basi parum bulbosi, septati, ca. 8–12μ crassi. Sporidia in nodulis parum prominentibus sessilia, elliptica, utrinque acutiuscula, fusca, 7–11μ longa, 5–7μ crassa.

Ad *Hamamelidis Virginicæ* folia languida. Bethlehem, Pa. Legit E. A. Rau.

Hottingen bei Zurich.

Notes on Grasses.—*Trichloris*, Fournier.—It was a mistake of mine to quote Fournier as the authority for *Trichloris Blanchardiana* (see No. 54 of the List of Pringle's Grasses, Bulletin, Vol. ix., p. 146). In fact, under the circumstances, it would have been better to omit the specific name altogether. Fournier, in the Gramineæ of the Mexicanarum Plantarum Enumeratio, not yet published, has two species of *Trichloris*, *T. fasciculata*, from Mexico, and *T. pluriflora*, from Texas (= No. 1,430 Berlandier). Without descriptions or specimens for comparison, I cannot say which name belongs to Pringle's grass. Mr. Bentham, in a recent letter, states that both